

CALIFORNIA

OCCUPATIONAL GUIDES

INDUSTRIAL MACHINERY MECHANICS

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INTEREST AREA
REALISTIC



WHAT DOES AN INDUSTRIAL MACHINERY MECHANIC DO?

INDUSTRIAL MACHINERY MECHANICS adjust, maintain, and repair machinery and mechanical equipment, such as pumps, motors, engines, cranes, conveyor systems, and production machinery used in factories. They are sometimes called Industrial Machinery Repairers or Machinery Maintenance Mechanics.

Industrial Machinery Mechanics perform "preventive maintenance" routines – a series of prescribed tests and measurements conducted at regular intervals on machinery to ensure continuous operation and to detect possible breakdown conditions before actual equipment failure. They also make adjustments to machinery using precision measuring instruments, and are responsible for cleaning, greasing, and oiling machinery to prevent breakdowns.

Industrial Machinery Mechanics perform the following tasks:

- Observe, test, and assess the operation of machines to detect the causes of malfunction.
- Take apart and reassemble machinery parts.
- Talk with operators and supervisors about machinery and maintenance problems.
- Read and follow blueprints, sketches, diagrams, lubrication charts, operation manuals, and engineering specifications.
- Examine parts for defects, such as breakage or excessive wear.
- Repair, replace, adjust, and align machinery and equipment parts, using tools such as screwdrivers, welding torches, wrenches, and hoists.
- Clean and lubricate machine parts.
- Keep repair and maintenance logs.
- Use catalogs to order replacement parts, or if not available, may sketch the needed part and have it fabricated by a machine shop.
- Test machines to ensure repairs are made.

Millwrights

Millwrights install, dismantle, repair, and replace machinery and heavy equipment. They generally work for a contracting company, performing jobs at different factories and locations as contracts come and go. While an Industrial Machinery Mechanic works in one industry, Millwrights can work in many industries and know a broader range of equipment. They perform the following tasks:

- Dismantle machines, using hammers, wrenches, crowbars, and other hand tools.
- Assemble, install, and repair equipment, using hand tools and power tools.

- Bolt parts, such as side and deck plates, jaw plates, and journals, to basic assembly unit.
- Attach moving parts and subassemblies to basic assembly unit, using hand tools and power tools.
- Assemble machines, and bolt, weld, rivet, or otherwise fasten them to foundation or other structures, using hand tools and power tools.
- Dismantle machinery and equipment for shipment to installation site, usually performing installation and maintenance work as part of a team.
- Move machinery and equipment, using hoists, dollies, rollers, and trucks.
- Align machines and equipment, using hoists, jacks, hand tools, squares, rules, micrometers, and plumb bobs.
- Connect power unit to machines or steam piping to equipment, and test unit to evaluate its mechanical operation.

WHAT SKILLS ARE IMPORTANT?

Important skills, knowledge, and abilities for Industrial Machinery Mechanics include:

- Hearing Sensitivity – The ability to detect or tell the differences between sounds that vary in pitch and loudness.
- Repairing – Repairing machines or systems using the needed tools.
- Equipment Maintenance – Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
- Quality Control Analysis – Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
- Troubleshooting – Determining causes of operating errors and deciding what to do about it.
- Operation Monitoring – Watching gauges, dials, or other indicators to make sure a machine is working properly.
- Equipment Selection – Determining the kind of tools and equipment needed to do a job.
- Visualization – The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.
- Manual Dexterity – The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.
- Finger Dexterity – The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.
- Mechanical – Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
- Engineering and Technology – Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.

Mechanics must be able to stand, stoop, lean, lift, squat, and have full use of both hands. Those interested in activities that include practical, hands-on problems and solutions would enjoy this work.

WHAT'S THE WORK ENVIRONMENT?

Industrial Machinery Mechanics work in areas that are usually noisy, but well lighted and ventilated. The work is sometimes dirty and greasy. Work may be inside or outside. Repair work is relatively safe; however, hazards may include cuts and bruises from sharp tools and metal objects. Safety helmets, goggles, metal-tipped shoes and other protective devices help prevent serious injuries. These workers may work alone or with other workers and trainees. Uniforms are sometimes required. Most Mechanics provide their own basic tool kit, which may cost up to \$1,000.

Union Membership

Industrial Machinery Mechanics belong to unions affiliated with particular industries. Some unions include the United Steel Workers of America; United Rubber, Cork Linoleum, and Plastic Workers of America; United Auto Workers; International Chemical Workers; United Industrial Workers; Teamsters Union; International Longshoremen's and Warehousemen's Union; the

United Brotherhood of Carpenters and Joiners of America; and the International Association of Machinist and Aerospace Workers.

WHAT'S THE CALIFORNIA JOB OUTLOOK?

The following information is from occupational projections produced by the Employment Development Department (EDD) Labor Market Information Division (LMID):

Industrial Machinery Mechanics

Estimated number of workers in 2000:	11,800
Estimated number of workers in 2010:	13,400
Projected Growth 2000-2010:	13.6%
Est. openings due to separations by 2010:	3,400

These figures do not include self-employment.

Employment for this occupation is projected to grow at a rate slower than average compared with all occupations in California.

Millwrights

Estimated number of workers in 2000:	2,600
Estimated number of workers in 2010:	2,800
Projected Growth 2000-2010:	7.7%
Est. openings due to separations by 2010:	800

These figures do not include self-employment.

Employment for this occupation will grow at a rate slower than average compared with all occupations in California.

The majority of job openings will stem from replacement needs as Industrial Machinery Mechanics and Millwrights leave the labor force or move to other occupations.

Trends

The trend toward industrial automation, with increasingly complex and more expensive machinery, may tend to increase the demand for additional Industrial Machinery Mechanics to perform essential preventive maintenance routines. However, most new machines feature more self-diagnostic capabilities and better reliability, which may reduce the need for some repair work.

Unlike many other occupations concentrated in manufacturing industries, Industrial Machinery Mechanics usually are not affected by seasonal

changes in production. During slack periods, when some plant workers are laid off, Mechanics often are retained to do major overhaul jobs. Although these workers may face layoff or a reduced workweek when economic conditions are particularly severe, they usually are less affected than other workers because machines have to be maintained regardless of production level.

WHAT DOES THE JOB PAY?

California Earnings

Industrial Machinery Mechanics 2002 Wages

Hourly wages range from	\$17.47	to	\$25.22
Average hourly wage	\$20.97		
Average annual wage	\$43,609		

Millwrights 2002 Wages

Hourly wages range from	\$14.30	to	\$26.67
Average hourly wage	\$20.61		
Average annual wage	\$42,872		

Source: Occupational Employment Survey of Employers by EDD/LMID.

Hours

Because factories and other facilities cannot afford breakdowns of industrial machinery, repairers may be called to the plant at night or on weekends for emergency repairs. Overtime is common among Industrial Machinery Mechanics – more than a third work over 40 hours a week. Additionally, workers may work day, swing, or night shifts on a rotating basis.

Benefits

Benefits usually include sick leave, vacation, holidays, health and dental insurance, and retirement plans.

HOW DO I PREPARE FOR THE JOB?

Education and Training

Many Industrial Machinery Mechanics learn their trade through a four-year apprenticeship program combining classroom instruction with on-the-job training. These programs are usually sponsored by trade unions, and prospective entrants must take

examinations in subjects such as basic math. Other workers start as helpers and pick up the skills of the trade informally and by taking courses offered by machinery manufacturers and community colleges.

Repairers learn from experienced journey-level workers how to operate, disassemble, repair, and assemble machinery. Classroom instruction focuses on subjects such as shop mathematics, blueprint reading, welding, electronics, and computer training.

Most employers prefer to hire those who have completed high school. High school courses in mechanical drawing, mathematics, physics, computers, and electronics are especially useful.

Licensing and Certification

There is currently no license or certification required in California for this occupation.

Continuing Education

As machines change in their complexity and make-up, Industrial Machinery Mechanics, too, must learn new skills to keep abreast of the changes. Electronics and computer courses, plus courses offered by machinery manufacturers, are needed by these workers to keep their skills current.

HOW DO I FIND THE JOB?

Industrial Machinery Mechanics usually register for work with unions. Direct application to employers is another effective job search method. Private firms are listed in the yellow pages under Machine Shops, Machinery – Repairing, and Machinery – Specially Designed. California job openings can be found at various online job-listing systems including CalJOBSSM at www.caljobs.ca.gov or at America's Job Bank at www.ajb.dni.us.

Industrial Machinery Mechanics are found in a variety of industries; the machinery they service varies with the industry. The highest concentrations of these workers are found in the canning, preserving, packaging, metal fabrication, and plastic companies. A smaller

number of Mechanics are located in construction companies, hospitals, government facilities, mines, and public utilities.

Some Industrial Machinery Mechanics work on textile machines, sewing machines in sewing departments of industrial establishments, printing equipment, and marine equipment aboard ships and other floating structures. Underground mine Machinery Mechanics repair, adjust, and maintain underground mining machinery, such as drilling and cutting machines, continuous mining machines, and underground conveyor systems.

For other occupational and wage information and a listing of the largest employers in any county, visit the Employment Development Department Labor Market Information Web page at www.calmis.ca.gov. Find further job search assistance from your nearest Job Service office www.edd.ca.gov/jsloc.htm or the closest One-Stop site listed on the California WorkNet site, www.sjtcc.ca.gov/sjtccweb/one-stop.

WHERE CAN THIS JOB LEAD?

Advancement for Industrial Machinery Mechanics is usually in the form of salary increases. Large companies may offer promotion into supervisory positions. With advanced training and years of experience, these workers can promote into master mechanic, tool and die maker, or supervisory positions within the industry or firm.

OTHER SOURCES OF INFORMATION

CA Division of Apprenticeship Standards
For the closest district office, go to Web site www.dir.ca.gov/DAS/das.html, or call Apprenticeship Standards Information listed in your telephone directory white pages

National Tooling and Machining Association
9300 Livingston Road
Fort Washington, MD 20744-4998
(800) 248-6862
www.ntma.org

Precision Machined Products Association
 6700 West Snowville Road
 Brecksville, OH 44141
 (440) 526-0300
www.pmpa.org

Employment Projections by Occupation
www.calmis.ca.gov/htmlfile/subject/occproj.htm

Employment and Wages by Occupation
[www.calmis.ca.gov/file/occup\\$/OES\\$.htm](http://www.calmis.ca.gov/file/occup$/OES$.htm)

RELATED OCCUPATIONAL GUIDES

Machinists and Numerical Control	
Tool Programmers	No. 9
Tool and Die Makers	No. 15
Stationary Engineers	No. 234

OCCUPATIONAL CODE REFERENCES

SOC (*Standard Occupational Classification*)

Industrial Machinery Mechanics	49-9041
Millwrights	49-9044

O*NET (*Occupational Information Network*)

Industrial Machinery Mechanics	49-9041.00
Millwrights	49-9044.00

OES (*Occupational Employment Statistics*)

Machinery Maintenance Mechanics, Marine Equipment	85116
Machinery Maintenance Mechanics, Water/Power Plant	85118
Machinery Maintenance Mechanics, All Other	85119
Millwrights	85123

DOT (*Dictionary of Occupational Titles*)

Machine Repairer, Maintenance	638.261-030
Maintenance Mechanic	638.281-014